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09/578,019	05/24/2000	Michael R. Krause	10991834-2	6337

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EXAMINER	
ENGLAND, DAVID E	
ART UNIT	**PAPER NUMBER**
2143	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/578,019	KRAUSE ET AL.	
	Examiner	Art Unit	
	David E. England	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 3 – 30, and 32 – 53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3 – 30, and 32 – 53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DL

DETAILED ACTION

1. Claims 1, 3 – 30, and 32 – 53 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. . Claims 1 3, 4, 9 – 11, 15, 16, 22, 29, 30, 32, 33, 41, 42 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller et al. U.S. Patent No. 6151696 (hereinafter Miller) in view of Nessett et al. U.S. Patent No. 5968176 (hereinafter Nessett) in further view of Van Loo et al. U.S. Patent No. 6064672 (hereinafter Van Loo) in further view of Ruszczyk (6205150).

4. As per claim 1, as closely interpreted by the Examiner, Miller teaches a data processing system comprising:

5. a source device participating in a multicast group and including:

6. a first source application instance (AI) producing a first unit of work stream, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22); and

7. communication services (CS), (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22);

8. multiple destination devices participating in the multicast group, each destination device in the multicast group including:

9. at least one destination AI which consumes units of work, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22); and CS, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22);

10. multiple source and destination resources (SDRs), each SDR implementing a reliable transport service between the source device and a corresponding one of the multiple destination devices in the multicast group for delivery of the first unit of work stream at the corresponding one of the multiple destination devices, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22), wherein each SDR includes:

11. wherein the CS in the source device correlates the independent reliable transport services and verifies that a predetermined percentage of destination AIs in the multicast group reliably receives each unit of work or a cumulative set of units of work in the first unit of work stream in the expected defined order, (e.g., col. 4, line 55 – col. 5, line 22, *"done list"* & col. 11, line 39 – col. 12, line 26).

12. Miller does not specifically teach communication services/fabric providing communication between the source device and the multiple destination devices; and

13. guaranteeing strong ordering of the first unit of work stream received at the corresponding one of the multiple destination devices;

14. first SDR resources at the source device having at least one queue configured to hold transmitted from the source device to the corresponding one of the multiple destination devices but not acknowledged units of work and not yet transmitted units of work; and

15. second SDR resources at the corresponding one of the multiple destination devices having state information including an expected next sequence number value indicating an expected defined order corresponding to a next unit of work to be received; and

16. independent reliable transport services.

17. Nessett teaches communication services/fabric providing communication between the source device and the multiple destination devices, (e.g. col. 13, lines 9 – 31 & col. 11, line 54 – 67 & col. 12, line 66 – col. 13, line 31). It would have been obvious to one skilled in the art at the time the invention was made to combine Miller with Nessett because it would be more efficient and reliable for a system to utilize a physical connection rather than a wireless one.

18. Van Loo teaches guaranteeing strong ordering of the first unit of work stream received at the corresponding one of the multiple destination devices, (e.g. col. 1, lines 21 – 60 & col. 3, lines 11 – 61);

19. second SDR resources at the corresponding one of the multiple destination devices having state information including an expected next sequence number value indicating an expected defined order corresponding to a next unit of work to be received, (e.g. col. 21, lines 25 – 40). It would have been obvious to one skilled in the art at the time the invention was made to combine Van Loo with the combine system of Miller and Nessett because utilizing the properties of strong ordering, keep track of transmitted packets in a specific order, would make the system function more efficient as to the tracking of lost packets.

20. Ruszczyk teaches first SDR resources at the source device having at least one queue configured to hold transmitted from the source device to the corresponding one of the multiple

destination devices but not acknowledged units of work and not yet transmitted units of work, (e.g. col. 4, line 47 – col. 5, line 4); and

21. independent reliable transport services, (e.g. col. 2, lines 23 – 47). It would have been obvious to one skilled in the art at the time the invention was made to combine Ruszczyk with the combine system of Miller, Nessett and Van Loo because it would be more efficient for a system utilize higher class-of-service and quality-of-service connections transmitting higher priority data packets. Thus, various customers on the network system will transmit and receive both high priority and low priority data packets. Furthermore, it would be obvious to one skilled in the art to have resources that are queued without acknowledges for them because if they are part of an initial transmission, one cannot have an acknowledged unit because it has not been transmitted yet.

22. As per claim 3, as closely interpreted by the Examiner, Miller teaches the predetermined percentage is 100% of the destination AIs, (e.g. col. 11, line 39 – col. 12, line 26).

23. As per claim 4, as closely interpreted by the Examiner, Miller teaches the predetermined percentage is less than 100% of the destination AIs, (e.g. col. 11, line 39 – col. 12, line 26).

24. As per claim 9, as closely interpreted by the Examiner, Miller teaches the CS in the source device replicates the first unit of work stream for transmission to the destination AIs in the multicast group, (e.g. col. 2, line 42 – col. 4, line 11 & col. 12, line 53 – col. 13, line 50).

25. As per claim 10, as closely interpreted by the Examiner, Miller teaches the communication services/fabric includes at least one replicater component for replicating the first unit of work stream for transmission to the destination AIs in the multicast group, (e.g. col. 2, line 42 – col. 4, line 11 & col. 12, line 53 – col. 13, line 50).

26. As per claim 11, Miller teaches the data processing system further comprises:

27. at least one middleware AI, (e.g. col. 12, line 53 – col. 13, line 50).

28. As per claim 15, as closely interpreted by the Examiner, Miller teaches an AI, middleware AI, or CS performs a get attribute operation to query current attributes of the multicast group, (e.g. col. 9, lines 32 – 39 & col. 11, line 40 – col. 12, line 26).

29. As per claim 16, as closely interpreted by the Examiner, Miller teaches an AI, middleware AI, or CS performs a set attribute operation to set multicast group attributes, (e.g. col. 9, lines 32 – 39 & col. 11, line 40 – col. 12, line 26).

30. As per claim 30, as closely interpreted by the Examiner, Miller teaches consuming the first unit of work stream with the at least one destination AI at each of the multiple destination devices participating in the multicast group, (e.g. col. 2, line 34 – col. 4, line 11 & col. 4, line 55 – col. 5, line 22).

31. As per claim 22, as closely interpreted by the Examiner, Miller, Nessett and Van Loo do not specifically teach the source device also functions as a destination device and at least one of the destination devices also functions as a source device. Official Notice is taken that it was a common practice to have the source device also functions as a destination device and at least one of the destination devices also functions as a source device at the time the instant invention was made.

32. It would have been obvious to one having ordinary skill in the computer art at the time of the invention was made to modify the data processing system disclosed by the combination of Miller, Nessett and Van Loo to have the source device also functions as a destination device and at least one of the destination devices also functions as a source device using the teaching of common practice. The modification would be obvious because one of ordinary skill in the art would be motivated to add this limitation because the source and destination is determined by whichever node in the network wants to multicast to other nodes on the network. If later after the multicast session is finished, the previous destination node want to multicast information across the network all one would have to do is set up a session and add the nodes that wish to receive the information.

33. Claims 29, 32, 33, 41, 42 and 46 are rejected for similar reasons as stated above.

34. Claims 5 – 8, 18 – 20, 34 – 37 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo and Ruszczyk as applied to claims 1, 2, 29 and 31 above, and in further view of Block et al. (6192417) (hereinafter Block).

35. As per claim 5, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach an acknowledgement counter which counts acknowledgements received from the corresponding destination devices in the multicast group indicating that the corresponding destination device has received a unit of work or a cumulative set of units of work in the first unit of work stream. Block teaches an acknowledgement counter which counts acknowledgements received from the corresponding destination devices in the multicast group indicating that the corresponding destination device has received a unit of work or a cumulative set of units of work in the first unit of work stream, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more efficient for a system to count the number of acknowledgements so to keep track of the different packets that have not arrived or have errors in them and have these packets retransmitted.

36. As per claim 6, as closely interpreted by the Examiner, Miller teaches the predetermined percentage of destination AI but Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the CS in the source device generates a completion event when the acknowledgement counter indicates that the multicast group have acknowledged the unit of work or a cumulative set of units of work has been received. Block teaches the CS in the source device generates a completion event when the acknowledgement counter indicates that the multicast group have acknowledged the unit of work or a cumulative set of units of work has been received, (e.g. col.

15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more efficient if the system utilized a percentage of acknowledgement counters to almost predict the type of service that a specific node might need for the missing acknowledgements that need to be retransmitted.

37. As per claim 7, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the CS in the source device includes:

38. a bit-mask array which assigns a unique bit for each destination AI in the multicast group and clears each bit as a corresponding acknowledgment is received from the corresponding destination device in the multicast group indicating that the corresponding destination device has received a unit of work or a cumulative set of units of work in the first unit of work stream. Block teaches the CS in the source device includes:

39. a bit-mask array which assigns a unique bit for each destination AI in the multicast group and clears each bit as a corresponding acknowledgment is received from the corresponding destination device in the multicast group indicating that the corresponding destination device has received a unit of work or a cumulative set of units of work in the first unit of work stream, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more efficient for a system to have separate indicators, (i.e. bit-mask array), to indicate which destination nodes did not receive a specific unit of work in the first unit of work stream and only have to send the

specific unit of work in the first unit of work stream to a specific destination node instead of sending the unit of work in the first unit of work stream to every destination node in the network which could cause network congestion.

40. As per claim 8, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the CS in the source device generates a completion event when the bit-mask array has the predetermined percentage of bits cleared in the bit-mask array indicating that the predetermined percentage of destination AIs in the multicast group have acknowledged the unit of work or a cumulative set of units of work has been received. Block teaches the CS in the source device generates a completion event when the bit-mask array has the predetermined percentage of bits cleared in the bit-mask array indicating that the predetermined percentage of destination AIs in the multicast group have acknowledged the unit of work or a cumulative set of units of work has been received, (e.g. col. 15, line 51 – col. 16, line 39 & col. 18, line 41 – col. 19, line 4). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because for similar reasons as stated above.

41. As per claim 18, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach an agreed to multicast address is employed to address AIs in the multicast group. Block teaches an agreed to multicast address is employed to address AIs in the multicast group, (e.g. col. 15, lines 19 – 50). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller,

Nessett, Van Loo and Ruszczyk because it would be more convenient for a system to use one multicast address port that can monitor, receive and transmit unit of work in the first unit of work stream in a multicast environment instead of having numerous multicast address port that could all send the same information across the network that could cause network congestion.

42. As per claim 19, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the CS in each device participating in the multicast group interprets the agreed to multicast address and responds to the agreed to multicast address to perform a reliable multicast operation on behalf of the corresponding destination AI. Block teaches the CS in each device participating in the multicast group interprets the agreed to multicast address and responds to the agreed to multicast address to perform a reliable multicast operation on behalf of the corresponding destination AI, (e.g. col. 14, line 43 – col. 16, line 21). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because of similar reasons as stated above.

43. As per claim 20, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the data processing system performs a reliable multicast operation having substantially the same semantic behavior relative to a given AI as an unreliable multicast operation. Block teaches the data processing system performs a reliable multicast operation having substantially the same semantic behavior relative to a given AI as an unreliable multicast operation, (e.g. col. 14, line 43 – col. 16, line 21). It would have been obvious to one

skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more convenient for a system to utilize protocols such a TCP and UDP for transmitting information across a network instead of using protocols that are not standard and having to add more overhead to a packet in order to transmit to other networks that do not support the non-standard protocol, causing a slower network.

44. Claims 34 – 37 and 44 are rejected for similar reasons as stated above.

45. Claims 12 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo and Ruszczyk as applied to claims 1, 11 and 29 above, and in further view of Hamilton et al. (6392993) (hereinafter Hamilton).

46. As per claim 12, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the CS in the source device includes a timing window and if the timing window expires without necessary conditions for a completion event occurring, then the middleware AI or CS tracks and resolves missing acknowledgments. Hamilton teaches the CS in the source device includes a timing window and if the timing window expires without necessary conditions for a completion event occurring, then the middleware AI or CS tracks and resolves missing acknowledgments, (e.g. col. 27, line 1 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more

efficient for a system to retransmit a packet that has not been acknowledged so incase of a transmission error the system will retransmit the missing packet after an amount of time so to be certain that the destination node will receive the entire transmitted data, preventing missed packet errors.

47. Claim 38 is rejected for similar reasons as stated above.

48. Claims 13, 14, 17, 39, 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo and Ruszczyk as applied to claims 1, 11 and 29 above, and in further view of Muller et al. (6256740) (hereinafter Muller).

49. As per claim 13, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically a given AI joins the multicast group by performing a multicast join operation, and the middleware AI or CS determines whether the given AI can join the multicast group, validates access rights, and informs the devices participating in the multicast group of changes in the group. Muller teaches a given AI joins the multicast group by performing a multicast join operation, and the middleware AI or CS determines whether the given AI can join the multicast group, validates access rights, and informs the devices participating in the multicast group of changes in the group, (e.g. col. 18, line 47 – col. 19, line 25). It would have been obvious to one skilled in the art at the time the invention was made to combine Muller with the combine system of Miller, Nessett, Van Loo and Ruszczyk because if an AI was required to have information that is being multicasted across the network it would be more efficient for a system

to add the new AI to the multicast group instead of setting up and sending a separate transmission to that specific AI.

50. As per claim 14, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach a given AI leaves the multicast group by performing a multicast leave operation, and the middleware AI or CS informs the devices participating in the multicast group to remove the given AI from the destination list, to complete all in-flight units of work as though the given AI were still present, and to not target the given AI for units of work not yet launched. Muller teaches a given AI leaves the multicast group by performing a multicast leave operation, and the middleware AI or CS informs the devices participating in the multicast group to remove the given AI from the destination list, to complete all in-flight units of work as though the given AI were still present, and to not target the given AI for units of work not yet launched, (e.g. col. 31, lines 29 – 58). It would have been obvious to one skilled in the art at the time the invention was made to combine Muller with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more efficient for a system to have a given AI leave a multicast group if the AI does not need any of the information that is being transmitted. This will prevent the AI from receiving packets that are not needed and could make a network run faster because if the AI is not receiving any packets it will not have to send acknowledgements for transmitted information it receive and will not need retransmitted information.

51. As per claim 17, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach middleware AI performs a remove member operation to

remove a given AI from the multicast group without involving the given AI. Muller teaches middleware AI performs a remove member operation to remove a given AI from the multicast group without involving the given AI, (e.g. col. 31, lines 29 – 58). It would have been obvious to one skilled in the art at the time the invention was made to combine Muller with the combine system of Miller, Nessett, Van Loo and Ruszczyk because of similar reasons as stated above.

52. Claims 39, 40 and 43 are rejected for similar reasons as stated above.

53. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo and Ruszczyk as applied to claim 1 above, and in further view of VanDoren et al. (6279084) (hereinafter VanDoren).

54. As per claim 21, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the multiple SDRs are grouped into multiple SDR groups, wherein each of the multiple SDR groups includes at least one SDR and is assigned a unique priority level for effecting throughput and response time of units of work transmitted by the at least one SDR. VanDoren teaches the multiple SDRs are grouped into multiple SDR groups, wherein each of the multiple SDR groups includes at least one SDR and is assigned a unique priority level for effecting throughput and response time of units of work transmitted by the at least one SDR, (e.g. col. 24, lines 29 – 60). It would have been obvious to one skilled in the art at the time the invention was made to combine VanDoren with the combine system of Miller, Nessett, Van Loo and Ruszczyk because it would be more efficient if the system could

differentiate from the different SDRs and if there are SDRs that require immediate attention they could be allocated bandwidth to accommodate the network and provide a faster multicasting session.

55. As per claim 23, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk teach all that is disclosed above and Nessett teaches source SDR resources, at the source device, transmitting the first unit of work stream in a serial unit of work stream having units of work in a defined order over the communication services/fabric, (e.g. col. 13, lines 9 – 31 & col. 16, lines 13 – 29). Miller, Nessett, Van Loo and Ruszczyk do not specifically teach each SDR includes:

56. destination SDR resources, at the corresponding destination device, receiving the serial unit of work stream, and demultiplexing the serial unit of work stream into units of work provided to the corresponding at least one destination AI. VanDoren teaches each SDR includes:

57. destination SDR resources, at the corresponding destination device, receiving the serial unit of work stream, and demultiplexing the serial unit of work stream into units of work provided to the corresponding at least one destination AI, (e.g. col. 10, line 61 – col. 11, line 8). It would have been obvious to one skilled in the art at the time the invention was made to combine VanDoren with the combine system of Miller, Nessett, Van Loo and Ruszczyk because if the serial connection transmitted information that was multiplexed it would be more efficient if the system utilized the demultiplexing function so the system could read and understand the data that it was sent.

58. Claims 24, 26, 27, 47, 51 and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo, Ruszczyk and VanDoren as applied to claims 1, 23 and 29 above, and in further view of Hamilton (6392993).

59. As per claim 24, as closely interpreted by the Examiner, Miller, Nessett, Van Loo, Ruszczyk and VanDoren do not specifically teach the destination SDR resources provide a negative acknowledgement (NAK) for a unit of work received ahead of its defined order. Hamilton teaches the destination SDR resources provide a negative acknowledgement (NAK) for a unit of work received ahead of its defined order, (e.g. col. 27, line 23 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo, Ruszczyk and VanDoren because it would be more efficient for a system to send a NAK if information is sent out of order so not to cause errors in packet processing from packets that are sent and received in the network.

60. As per claim 26, as closely interpreted by the Examiner, Miller, Nessett, Van Loo, Ruszczyk and VanDoren do not specifically teach the destination SDR resources provide a positive acknowledgement (ACK) for each unit of work which is successfully received and processed by the destination SDR resources. Hamilton teaches the destination SDR resources provide a positive acknowledgement (ACK) for each unit of work which is successfully received and processed by the destination SDR resources, (e.g. col. 10, line 33 – col. 11, line 26 & col. 27, line 23 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the

invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo, Ruszczyk and VanDoren because of similar reasons stated above.

61. As per claim 27, as closely interpreted by the Examiner, Miller, Nessett, Van Loo, Ruszczyk and VanDoren do not specifically teach the destination SDR resources provide a cumulative positive acknowledgement (ACK) for a set of units of work that indicate that all units of work in the set of units of work up to and including a current unit of work have been successfully received and processed by the destination SDR resources. Hamilton teaches the destination SDR resources provide a cumulative positive acknowledgement (ACK) for a set of units of work that indicate that all units of work in the set of units of work up to and including a current unit of work have been successfully received and processed by the destination SDR resources, (e.g. col. 10, line 33 – col. 11, line 26 & col. 27, line 23 – col. 28, line 49). It would have been obvious to one skilled in the art at the time the invention was made to combine Hamilton with the combine system of Miller, Nessett, Van Loo, Ruszczyk and VanDoren because it would be more efficient for a system to transmit a cumulative ACK when all destination nodes have received there last units of work in the set of units of work so to save bandwidth on one transmission instead of sending multiple ACK messages that could slow down a network.

62. Claims 47, 51 and 52 are rejected for similar reasons as stated above.

63. Claims 25 and 48 – 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo, Ruszczyk, VanDoren and Hamilton as applied to claims 1, 23 and 29 above, and in further view of Miller (5553083) (hereinafter Miller2).

64. As per claim 25, as closely interpreted by the Examiner, Miller, Nessett, Van Loo, Ruszczyk, VanDoren and Hamilton do not specifically teach the destination SDR resources drop a unit of work received ahead of its defined order. Miller2 teaches the destination SDR resources drop a unit of work received ahead of its defined order, (e.g. col. 7, lines 36 – 54). It would have been obvious to one skilled in the art at the time the invention was made to combine Miller2 with the combine system of Miller, Nessett, Van Loo, Ruszczyk, VanDoren and Hamilton because it would be more efficient for a system to drop a unit of work received ahead of its defined order so all packets can be ACK in the order they were sent and not cause errors in having duplicate units of work that would be received later in transmission, which could also cause errors in the system.

65. As per claim 49, as closely interpreted by the Examiner, Miller, Nessett, Van Loo, Ruszczyk, VanDoren and Hamilton do not specifically teach temporarily storing a unit of work received at a corresponding destination device ahead of a defined order assigned to the unit of work. Miller2 teaches temporarily storing a unit of work received at a corresponding destination device ahead of a defined order assigned to the unit of work, (e.g. col. 7, lines 36 – 54). It would have been obvious to one skilled in the art at the time the invention was made to combine Miller2 with the combine system of Miller, Nessett, Van Loo, Ruszczyk, VanDoren and Hamilton because it would be more efficient if the system temporarily storing a unit of work

received at a corresponding destination device ahead of a defined order so the system can decipher if the unit of work received is in fact ahead of a defined order.

66. As per claim 50, as closely interpreted by the Examiner, Miller and Nessett do not specifically teach performing a resynchronization operation to recover a missing intermediate unit of work. Van Loo teaches performing a resynchronization operation to recover a missing intermediate unit of work, (e.g. col. 13, lines 44 – 63). It would have been obvious to one skilled in the art at the time the invention was made to combine Van Loo with the combine system of Miller and Nessett because it would be more efficient for a system to return to a synchronic state as it was before so not to initiate errors in the system from transmitting information out of synch with the other nodes in the multicasting group.

67. Claim 48 is rejected for similar reasons as stated above.

68. Claims 28 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo and Ruszczyk as applied to claims 1, 18 and 29 above, and in further view of Mallory (6335933).

69. As per claim 28, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach the destination SDR resources drop a unit of work in response to an indication that the unit of work is a duplicate unit of work. Mallory teaches the destination SDR resources drop a unit of work in response to an indication that the unit of work is a

duplicate unit of work, (e.g. col. 9, lines 40 – 26). It would have been obvious to one skilled in the art at the time the invention was made to combine Mallory with the combine system of Miller, Nessett, Van Loo and Ruszczyk because of similar reasons as stated above.

70. Claim 53 is rejected for similar reasons as stated above.

71. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miller, Nessett, Van Loo and Ruszczyk as applied to claim 29 above, and in further view of Block (6192417) in further view of VanDoren (6279084).

72. As per claim 45, as closely interpreted by the Examiner, Miller, Nessett, Van Loo and Ruszczyk do not specifically teach grouping the multiple reliable transport services into multiple reliable transport service groups, wherein each of the multiple reliable transport service groups includes at least one reliable transport service; and
assigning a unique priority level to each reliable transport service group for effecting throughput and response time of units of work transmitted by the at least one reliable transport service. Block teaches grouping the multiple reliable transport services into multiple reliable transport service groups, wherein each of the multiple reliable transport service groups includes at least one reliable transport service, (e.g. col. 14, line 43 – col. 16, line 21). It would have been obvious to one skilled in the art at the time the invention was made to combine Block with the combine system of Miller, Nessett, Van Loo and Ruszczyk because of similar reasons stated in the claims above. VanDoren teaches assigning a unique priority level to each reliable transport service

group for effecting throughput and response time of units of work transmitted by the at least one reliable transport service, (e.g. col. 24, lines 29 – 60). It would have been obvious to one skilled in the art at the time the invention was made to combine VanDoren with the combine system of Miller, Nessett, Van Loo, Ruszczyk and Block because of similar reasons stated in the claims above.

Response to Arguments

73. Applicant's arguments filed 12/08/2006 have been fully considered but they are not persuasive.

74. **In the Remarks**, Applicant argues in substance that Miller does not teach a percentage of destination application instances that receive each unit of work or a cumulative set of units of work in the first unit of work stream in the expected defined order.

75. As to the first Remark, the newly added limitation of a cumulative set of units of work in the first unit of work streams can be found in the prior art of Miller as interpreted by the Examiner. The limitation of cumulative set of units can be interpreted as "rounds" in Miller, column 2, lines 42 et seq. *"After the server has sent the entire amount of data (e.g., the entire file) over the link to the clients, the server performs a second round of transmissions in which it only resends the particular packets indicated by the clients as requiring retransmission... "*. Therefore, the receiver does receive a cumulative set of units in a defined order but then resends, and resend information that was not specifically receive again in another defined order.

76. **In the Remarks**, Applicant argues in substance that Miller teaches away from employing guaranteed strong ordering of the first unit of work stream received at the corresponding one of the multiple destination devices as recited in the amended claims and cites an area of Miller, (e.g., col. 4, line 66 – col. 5, line 8), to support their remarks. Furthermore, Miller teaches that a group threshold parameter may be set by the user as the limit, expressed in percent of drop frames, by a particular client that is allowed for continuing participation in the multicast group. Such a threshold cannot be used with a guaranteed strong ordering of the first unit of work stream received at the corresponding one of multiple destination devices.

77. As to the second Remark, Examiner respectfully disagrees that such a threshold as taught by Miller cannot be used in combination with strong ordering. The threshold can be used to determine which users will no longer be in a multicast group and therefore only keeps users with a higher packet acknowledgement rate. Which would put other users in another group or completely out of all multicast transmissions at the time of the multicast transmission. The newly added cumulative set of information, with a first unit of work stream, now gives different light on the interpretation as discussed above in the response to the first remarks.

78. **In the Remarks**, Applicant argues in substance that Ruszczyk does not teach a queue that holds transmitted from the source device to the corresponding on of the multiple destination devices not acknowledged units of work.

79. As to the last Remark, in transmitting information that waits for acknowledgement, the information is stored and awaits for a type of acknowledgment and until it is received the information stays in storage. Therefore, when a packet is first transmitted and awaits a type of

acknowledgment, it can be interpreted as a queue of unacknowledged packets and could therefore read on the claim language.

Conclusion

80. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David E. England whose telephone number is 571-272-3912. The examiner can normally be reached on Mon-Thur, 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Wiley can be reached on 571-272-3923. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David E. England
Examiner
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